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comet, it is found that the object is quite close to the Earth (on November 12th) astronomically speaking, for it is but a fifth of an astronomical unit, or roughly 19,000,000 miles away.

On October 31st announcement was made thru the Harvard College Observatory that a comet was observed by Fayet on October 29th. This is supposed to be the periodic comet first found by Schaumasse in 1911, the return of which has been expected. There is a larger discrepancy of the observed position from the ephemeris by Fayet and Schaumasse than would naturally be anticipated. There is but the one observation by Fayet so far at hand. The comet is difficult to observe, for it is low in the morning sky, near the Sun, and quite faint.

November 17, 1919.

H. M. JEFFERS.

NEW INFRA-RED LINES IN THE SOLAR PROMINENCE SPECTRUM

The solar prominence spectrum was photographed in the region 6500A to 9200A. The apparatus used was the 36-inch refractor and the grating spectrograph described by Campbell and Albrecht in *Lick Observatory Bulletin*, 6, 11, 1910. The second order of the grating was used thruout, the scale being about 10.5A per millimeter. The resolving power was in the neighborhood of 90,000. The photographic plates were sensitized by means of dicyanin kindly furnished by the Bureau of Chemistry (Washington).

In the visual region only the well-known bright lines hydrogen $H\alpha$, helium D_3 , and helium 7065A were recorded. The known helium line at 6678A was too faint to be photographed in the half-dozen prominences which were observed. The line at 7065A, on the other hand, was always found to be very strong, showing the same distribution of intensity as $H\alpha$ and D_3 . The different behavior of these two helium lines is of considerable interest and would seem to deserve further study, in spite of the large number of visual observations which have been made on them. The line at 7065A has usually been characterized as "weak" by visual observers, but photographically with dicyanin it is strong, rivalling D_3 .

In the region of wave-lengths longer than 7065A no prominence line was found until the calcium triple beginning at 8498A was reached. Of these three lines, the second, at 8542A, is always easily photographed; the third, at 8662A, is usually strong enough

to be observed in the prominences; while the first, at 8498A, always shows bright borders, but is much the faintest of the three in the prominences.

Dr. P. W. Merrill called my attention to the fact that these three lines in the laboratory spectrum of calcium are strong in the spark, and therefore might be expected to show in prominences. Perhaps the converse is true, that the magnesium line at 8807A, which shows bright borders at the edge of the Sun, will be found to be a spark line.

Beyond 8807A no line was observed in the prominences and none was found to give certain indications of bright borders at the Sun's limb.

The intensity of the sky spectrum relative to that of the solar disk falls off quite rapidly with increasing wave-length. This phenomenon probably follows Rayleigh's law, according to which the scattering of light by the molecules of the Earth's atmosphere varies inversely as the fourth power of the wave-length. The low intensity of the scattered light in the deep red and infra-red should facilitate the observation of any strong coronal lines that might be present. However, no such lines were found. The solar image is noticeably steadier in the infra-red than it is in the yellow-green.

Mt. Hamilton, Calif.,

KEIVIN BURNS.

November 17, 1919.

THE $H\alpha$ LINE IN α Ceti

During the recent maximum of α Ceti, which occurred early in August, its spectrum was photographed in the region 4800 to 6700A. The first spectrogram was obtained on July 22nd with the one-prism spectrograph set for minimum deviation and focus at D. On examining the plate it was seen that $H\alpha$ and $H\beta$ were both bright and that $H\alpha$ was strongly displaced toward the violet, while $H\beta$ was shifted toward the red with reference to the hydrogen comparison lines. Since the displacement of $H\beta$ was the same as that ordinarily shown by the hydrogen lines in α Ceti, it was considered that $H\alpha$ presented a peculiarity which should be investigated further. Accordingly plates were secured on July 25th and September 16th with the three-prism spectrograph set for minimum deviation at D. On both plates the $H\alpha$ line is well shown. A plate was also obtained on August 6th with the one-prism spectrograph set for $H\gamma$. This plate shows the bright lines $H\beta$, $H\gamma$, $H\delta$,